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ABSTRACT

A fourteen item Likert-type attitude scale concerning a college-level basic skills program was developed from topics suggested by the program staff. The scale was completed by 216 college freshmen who were enrolled in at least one of the three courses offered by the program: writing and reading, study habits and thinking strategies, and mathematics. After factor analysis, six factors accounted for 47.3% of the total variance among scores; results provide some evidence of construct validity. Item scores from the scale were compared to grades in basic skills courses and to achievement on three measures: California Achievement Test, Nelson-Denny Reading Test, and an unpublished grammar test developed locally. While correlations were generally too low to confirm construct validity, they did provide some evidence of discriminant validity by verifying the distinction between opinion of, and achievement in, the skills program. Reliability estimates, calculated for the first two factors only, were determined to be adequate. At least three factors confounded the results: type of skills course, number of skills courses taken, and instructor. The scale and item analysis data are appended. (CP)

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Measuring Student Opinion of a College Basic Skills Program

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Measuring Student Opinion of a College Basic Skills Program

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The purpose of this study was to construct a scale measuring student opinions of a college skills program and to assess the reliability and validity of the scale. While most skills program evaluation efforts fail to measure this construct, it is easily seen as important to program evaluation. The instrument was completed by 216 Basic Studies students. A factor analysis of the items and correlations with achievement measures demonstrate some degree of construct validity. Estimates of cluster reliabilities were determined to be adequate. The results indicated a useful, reliable and valid scale measuring this construct can be developed.

Measuring Student Opinion of a College Basic Skills Program

College-level programs focusing on developing students' basic skills - skills in reading, writing, studying, computing, etc. - are receiving increased attention throughout the country. Available literature suggests that, in a wide variety of colleges and universities, skills programs are continually being developed, refined, and evaluated.

Most of the literature found on skills programs seems to focus on describing the general structure of a particular program. Generally speaking, little in the way of systematic evaluation of skills program effectiveness is reported (Daly, Note 1). The evaluation efforts that are reported appear to center around such measures as achievement test scores, attrition or retention rates, grades, and scores from measures of self-esteem or confidence. A few use measures of attitude toward the subject studied.

An apparent weakness of most current skills program evaluation efforts is failure to measure student opinions of the program itself. Indeed, few affective measurement devices have been developed for any kind of program evaluation (Popham, 1975). Nonetheless, it is easy to see why assessing student opinions of a skills program would be an important part of an evaluation effort. Three reasons seem readily apparent:

First, some students may feel placement into a skills program is demeaning and leads to discrimination against them by teachers and other students. This feeling could in turn lead to a loss of self-confidence and a poor attitude toward college.

Second, some students may feel the work is too hard or too easy or demands too much of their time. This feeling could lead to frustration or discouragement and eventually to a loss in self-confidence or a poor attitude toward college.

Third, some students may feel the teachers are unreceptive or the grading method unfair. Since skills programs are often among the first exposures a student gets to college, it is likely that these feelings, too, could lead to a poor attitude toward college as a whole.

While direct measures of self-confidence, such as those used in some current evaluation efforts, are useful, a measure of opinion of the program may help relate specific aspects of the program to changes in self-confidence or attitude toward college and thus provide even more useful information.

While measures of student opinion of the subject studied are also useful, students' attitudes may be affected by a program's format as well as by the subject studied. Anderson, Ball, Murphy, and Associates (1975) note studies by Feldman and Newcomb and by Thistlethwaite showing that the college environment can affect students' value systems.

An instrument measuring student opinion of a skills program could thus play an important role in the evaluation of such a program. The purpose of this study was to construct such an instrument and to assess its reliability and validity. The scale was specifically designed for the Basic Studies (BASK) program at Stockton State College in Pomona, New Jersey, with an eye to its potential applicability in similar programs.

Method

Instrument Development

An initial instrument was developed from topics suggested by BASK staff members as important in the domain of affective program evaluation. The instrument consists of fourteen items, each on a four-point Likert scale. It also asked for the respondent's student identification number. The instrument was reviewed by BASK staff members and minor modifications were made. Figure 1 shows the final version of the instrument.

Subjects of the Study

The instrument was administered to freshmen in the BASK program at Stockton State College. Stockton is located in a rural area and serves 4121 students. Mean Fall, 1976, freshmen SAT scores were 441 (verbal) and 466 (math). Mean SAT scores of freshmen placed into the BASK program were 405 (verbal) and 425 (math). Each student was enrolled in at least one of the three courses offered by the program: writing and reading, study habits and thinking strategies, and mathematics.

Procedure

The instrument was administered to BASK students in classes and test sessions at Stockton between December 15 and 21, 1976. It was collected and returned to the author by students, not teachers, so as to protect the anonymity of the respondents and encourage honest responses. Of 322 freshmen in the Fall, 1976, BASK program, 216 or two-thirds completed the questionnaire.

The following data was also collected for students in the program:

1. Grades in BASK courses.

2. Test scores obtained during Fall registration and used to place the students into BASK courses:

   a. California Achievement Test, Form A (Tiegs & Clark, 1970). Four scores were used: computation, word problems, concepts, and total.

   b. Nelson-Denny Reading Test, Form C (Brown, 1973). Two scores were used: comprehension and total (vocabulary + comprehension).

   c. An unpublished grammar test of 70 items developed by BASK faculty members.

3. Scores on alternate forms of the placement tests, obtained during the last week of Fall classes.

Of the 216 students who completed the questionnaire, 175 or 81% reported valid social security numbers which enabled matching questionnaire answers with the achievement data. The data analysis was made on these 175 students.

Data Analysis

The questionnaire items were scored as follows: "strongly agree" four points, "agree" three points, "disagree" two points, "strongly disagree" one point. Four items - 5, 6, 8, and 11 - were negatively phrased in the questionnaire. For the purpose of this study, they were reworded in a positive direction and their scores reversed.

The analysis of the data consisted of three parts. First, a factor analysis of the items was studied for evidence of construct validity.

Second, correlations with achievement measures were examined for additional construct validity evidence. Finally, estimates of the internal consistency of the scale were obtained.

Results

Table 1 shows descriptive statistics for each item and for the total score.

Validity Evidence

The factor analysis studies employed a principal factoring method with iterations and the varimax rotating method. The number of factors extracted was the number with an eigenvalue equal to or greater than 1.00; the iterative convergence criterion was set at .001; and the maximum possible number of iterations was set at 99.

Six factors emerged (Table 2). Four seem concerned with satisfaction with various aspects of the program; the fifth seems concerned with recognition of the program's usefulness. The remaining factor seems concerned with whether the respondent accepts his role in the BASK program. The six factors account for 47.3% of the total variance among scores. The results provide some evidence of the scale's construct validity.

The construct validity of the scale was further examined by comparing item scores from the scale with end-of-term achievement measures, with the effect of pre-term achievement partialed out (Tables 3 and 4). Although some items show statistically significant ($p<.05$) correlations with some achievement measures, the correlations are generally of a low magnitude and the significant ones show no consistent pattern. The correlations thus

provide some evidence of "discriminant" validity (Campbell & Fiske, 1959): verification of the distinction between opinion of and achievement in the skills program.

Reliability Evidence

Evidence of the internal consistency of this type of scale is difficult to present meaningfully. The presence of at least six factors indicates that neither a "total" score nor evidence of overall internal consistency may be meaningful.

While evidence of the internal consistency of each item cluster may have more intuitive meaning, it is difficult to give much credence to a reliability coefficient based on only two or three items, which is what four of the six factor clusters are composed of.

Reliability estimates were thus calculated for the first two factors only, since these factors were composed of four items each (Table 2). Coefficient alpha estimates were found to be .82 and .61 for Factors 1 and 2, respectively.

Discussion

The results of this study indicate it is possible to construct a useful scale measuring opinion of a basic skills program with some degree of reliability and validity.

The validity and reliability evidence is promising. The factor analysis provided insights into the nature of student opinions of skills programs, indicating that student opinion of a skills program may consist in part of

satisfaction with four of its components: faculty, entry procedures, schedule, and workload. It may also partly consist of student appreciation of the program's value and of the student's acceptance of his role in the program. The correlations relating item scores to achievement measures offer evidence that a construct other than achievement in skills programs is generally being measured. The reliability coefficients seem adequate for a scale designed to measure group opinions (Mehrens & Lehmann, 1969).

It should be noted that there are at least three factors confounding the results: the type of skills course taken, the number of skills courses taken, and skills instructor. Although analyses of variance demonstrated significant ($p<.05$) variation in some item scores across these dimensions, the analysis was nonetheless conducted solely for the entire group. There are two reasons for this decision. First, replicating the analysis for each conceivable group would have meant a deluge of data based on extremely small groups and hence difficult to interpret. Second, the interest of the skills program staff was in developing an instrument useful in judging the <u>overall</u> effect of the program, and it was surmised that skills programs personnel at other institutions would feel similarly. The reader should be nonetheless aware of the potential weakness of the study.

While the scale developed here should either be useful to evaluators of other college skills programs or serve as a starting point for them as they develop their own, additional research on the scale and the construct it measures would nonetheless be useful. Additional evidence of the reliability and validity of the scale, particularly test-retest reliability and "convergent" validity

(Campbell and Fiske, 1959) would be desirable. Verification of the components of opinion of skills programs found by this study would be an important topic of future research in this field.

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Popham, J. W. Educational Evaluation. Englewood Cliffs, N. J.: Prentice-Hall, 1975.

Tiegs, E. W., & Clark, W. W. California Achievement Tests, 1970 edition. Monterey, California: CTB/McGraw-Hill, 1970.

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Table 1. Summary of item and total statistics

Item	Mean	Median	Standard Deviation	Number Responding
1.	2.5	2.6	.982	175
2.	2.8	2.9	.728	173
3.	2.0	2.0	.824	172
4.	3.0	3.0	.746	175
5.	3.0	3.1	.793	174
6.	2.9	3.0	.770	174
7.	2.9	2.9	.858	173
8.	2.3	2.3	.802	173
9.	3.0	3.0	.733	174
10.	2.9	2.9	.676	173
11.	3.0	3.0	.675	174
12.	3.2	3.2	.593	174
13.	3.1	3.1	.631	168
14.	3.1	3.1	.586	172

Table 2. Results of item factor analysis (n=175)

Tentative Title of Factor	Components	Proportion of Common Variance Accounted For	Proportion of Total Variance Accounted For	Coefficient Alpha Estimate of Reliability[1]
1. Satisfaction with help provided by BASK faculty	Items 5, 12, 13, 14	43.2%	20.4%	.82
2. Recognition of the usefulness of BASK courses	Items 6, 9, 10	15.4%	7.3%	.61
3. Satisfaction with fairness of entry procedures	Items 1, 2, 3, 5	14.1%	6.7%	
4. Satisfaction with schedule	Items 4, 5, 7	12.7%	6.0%	
5. Satisfaction with BASK workload	Items 6, 8	7.7%	3.4%	
6. Personal acceptance of BASK	Items 6, 11	6.9%	3.2%	

[1] Reliability estimates for Factors 3, 4, 5, and 6 were not computed because of the small number of items in each of these factors.

Table 3. Pearson correlations between questionnaire scores & average grade in BASK courses

Item	Correlation With Average BASK Grade	n
1.	.15*	175
2.	.18*	173
3.	.11	172
4.	-.09	175
5.	.09	174
6.	-.03	174
7.	-.11	173
8.	.16*	173
9.	.00	174
10.	.01	173
11.	.01	174
12.	-.01	174
13.	-.01	168
14.	.04	172

*$\rho > 0$, $p < .05$

Table 4. Partial correlations between item scores & end-of-term achievement scores (with the effect of pre-term achievement partialed out)

	Correlation With						
		Nelson-Denny Reading Test Scores		California Achievement Test Mathematics Scores			
Item	Grammar Test Scores	Comprehension	Total	Computation	Word Problems	Concepts	Total
1.	.16*	-.05	.01	.13	.00	.07	.16
2.	-.01	.15*	.10	.25*	.12	.26*	.22*
3.	.04	-.02	.10	.06	.00	.03	.02
4.	.04	-.01	.05	-.21*	-.12	-.21*	-.22*
5.	.03	.28*	.23*	.06	.11	.00	.05
6.	-.05	.05	-.08	.01	.06	.12	.08
7.	-.05	-.26*	-.14	-.12	-.11	-.03	-.06
8.	.15	.17*	.22*	.16	.22*	.21*	.10
9.	.09	.03	.07	.02	-.04	.10	.08
10.	.01	-.03	-.03	.07	-.10	.10	.10
11.	-.07	-.03	.02	.09	-.06	.16	.07
12.	-.02	-.05	-.01	.15	-.07	-.01	.07
13.	-.09	.01	.05	.26*	.01	.09	.18
14.	-.05	.11	.13	.27*	-.02	-.02	.15

$\rho > 0$, $p < .05$

Note. The approximate number of students used to compute each correlation coefficient is: grammar test 114, Nelson-Denny test 117, California test 74. The number varies slightly from item to item because not all students answered all items.

Figure Caption

Figure 1. Instrument Used in the Study

SURVEY OF STUDENT OPINIONS ON THE BASK PROGRAM
FALL TERM, 1976

Your Social Security Number: _____-____-_____

What BASK courses have you taken? ☐ Writing & reading ☐ Study Habits ☐ Mathematics

The college is interested in finding out how successful BASK was this semester and how it can be improved in the future. While your achievement is very important in finding out how successful we were, your feelings and opinions about the program are also important, and we'd like to find out about them.

For each of the statements below, check the box that most accurately shows your agreement or disagreement. If you'd like to explain any of your answers, use the space on the back of the questionnaire. If you have already completed this questionnaire, please do not fill out this copy.

YOUR RESPONSES ARE COMPLETELY CONFIDENTIAL.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I understood the purpose of the testing sessions held prior to registration.	☐	☐	☐	☐
2. The testing sessions were conducted fairly.	☐	☐	☐	☐
3. I was provided with clear, accurate results of the tests.	☐	☐	☐	☐
4. My preceptor didn't really provide much help in developing a schedule.	☐	☐	☐	☐
5. I am satisfied with the schedule my preceptor helped develop.	☐	☐	☐	☐
6. BASK courses are "Mickey Mouse"; the work they require is easy "busy work."	☐	☐	☐	☐
7. BASK courses require about the same time and effort as other courses.	☐	☐	☐	☐
8. BASK courses require more time and effort than other courses.	☐	☐	☐	☐
9. What I learned in BASK courses helped me in my other courses.	☐	☐	☐	☐
10. Since I've taken BASK courses, I have a better chance of getting through college.	☐	☐	☐	☐
11. Because I am in BASK, I feel I have been discriminated against.	☐	☐	☐	☐
12. BASK teachers are available outside of class.	☐	☐	☐	☐
13. BASK teachers are really interested in me as a person.	☐	☐	☐	☐
14. BASK teachers encourage my participation in class.	☐	☐	☐	☐